Software Engineering

Software engineering and information technologies are powerful force multipliers for the Army's future warfighter. The Information Science and Technology Directorate's Software Engineering Group (SEG) is developing advanced software engineering and information technologies to provide our warfighters with information superiority and to enhance their decision making ability, allowing them to make and execute decisions in a more timely and accurate manner than our adversaries. The SEG's unique experience and expertise constitute a core competency in software engineering for the U.S. Army Space and Missile Defense Command (SMDC). Current research and development efforts are focused on advanced operator system interfaces; intelligent software agents; adaptive decision aids; data mining and knowledge discovery; information assurance; computer network operations; software and network architectures; process modeling and improvement; collaborative engineering; and emerging software engineering paradigms, tools, and environments.

In addition to development of innovative software engineering and information technologies, the SEG provides all elements of the command, space and missile defense major defense acquisition programs (MDAPs), and Ballistic Missile Defense System elements with a full range of software engineering support and services. The SEG's extensive list of customers includes the Missile Defense Agency (MDA), Program Executive Office (PEO) Air and Missile Defense, and PEO Tactical Missiles weapon systems, Defense Information Systems Agency, Army Modeling and Simulation Office, and the Army Space Command. Key SEG support activities are described below.

- **Software Life Cycle Acquisition Support**: The SEG provides life cycle support on software and system acquisition activities, including statement of work and contract requirements package development, source selection evaluations, acquisition streamlining, and acquisition process assessment and improvement.

- **Subject Matter Expert (SME) Consultation**: The SEG provides software engineering consultation and support to all command elements, Ballistic Missile Defense System elements, MDAPs, and other government agencies as requested. Support services include independent software evaluations; software risk assessments; vulnerability assessments; software supportability assessments; participation in design/technical reviews; evaluation of software design and process documentation; software engineering environments; software process improvement; and software policies/standards interpretation and application.

- **Technology Transition:** The SEG facilitates the maturation and transition of software engineering and information technologies/processes to receptors via numerous mechanisms, including leadership/participation in conferences, technical working groups, technology demonstrations, and pilot programs. The SEG also sponsors workshops, tutorials, short courses, and symposia on a variety of software engineering and information technology topics.

- **Policies and Standards**: Numerous initiatives at the Department of Defense (DoD) and Department of the Army (DA) level require SMDC cognizance. The SEG serves as the command's subject matter expert for development and implementation of DoD, DA, command, and industry standards, policies and best practices in software engineering and information technologies. As the command's software engineering focal point, the SEG interfaces with external organizations such as the Army's Director of Information Systems Command, Control, Communications, and Computers (DISC4), DISA, the Army's Software Engineering Steering Group, and the Software Engineering Institute.

Awareness of emerging and enabling software engineering and information technologies, standards, and processes is essential to ensure successful development and transition of space and missile defense technologies. The Information Science and Technology Directorate's SEG plays the critical role of software risk mitigator for supported space and missile programs, improving the ability of our programs to meet their goals for cost, schedule, functionality, and product quality.